

March 19, 1979

Memo to File:

RE: Stauffer Chemical Company
Vernal Phosphate Mine
ACT/047/007

Stauffer's Vernal phosphate mine and tailings pond were inspected on March 13, 1979, by Mary Ann Wright, Tom Suchoski, and Mike Thompson from the Division with Fred Riding and Tom Scheffel from Stauffer. The purpose of the visit was to examine the existing fill structures that obstruct surface runoff in ephemeral drainages and to observe the tailings pond and impounding structures.

Two major road crossing structures that block washes were observed: Camp Creek and the one adjacent to the runway. The structures appear to be constructed mostly of large boulders, thereby allowing runoff impounded behind the structure to permeate through it. The structures also appear to be massive enough to withstand pressures caused by any reasonably expected flood. In addition, the structures appear to be high enough, with adequate volume behind them, to not be overtopped during any reasonably expected flood. It should be noted, however, that these determinations are not based on quantitative engineering or hydrologic analysis.

From observations of the present mining method it was obvious that areas where minimum overburden occurs are in the drainage bottoms. Because of this Stauffer mines out phosphate ore first from these drainages.

The tailings disposal operation was also observed. The impounding dam's outslope is constructed of earth materials and lies at the angle of repose. A small area where the dam had previously settled was observed. Also a very small slump on the outslope was noted. The dam was leaking water, probably where the structure joined the bedrock surface. A small secondary pond is constructed downslope to contain this water. Reclamation of the pond and dam was discussed. Division staff proposed that reclamation should include:

1. Deposit tailings in successive lifts away from the dam as operations approach termination so that the slope may be more level; presently, tailings are deposited at the dam face so that the slope and subsequent water flow is away from the dam,

Memo to File
Stauffer Chemical Company
March 19, 1979
Page Two

2. Upon termination cut a spillway, or spillways, through the dam or hillside in a location so that discharge would flow over bedrock surfaces and not the fill dam,
3. Revegetate the tailings and dam.

Division recommendations in working toward approval of the mining and reclamation plan include the following:

1. Grant a Division variance for the existing road-fill structures.
2. Grant a Division variance for future road-fill structures across ephemeral drainages, provided, that such fill structures must be designed and constructed utilizing french drain systems so that surface runoff may pass through the structure and the structure will not be overtopped. In addition, such fill structures must be engineered and constructed so that failure will not result from the 100 year flood event. Plans for fill structures must be submitted to the Division prior to site preparation and construction.
3. Grant a Division variance to allow phosphate mining within the ephemeral drainages, provided, that the washes are expeditiously reclaimed. Reclamation of these mined areas must include regrading, drainage restoration and revegetation. ✓
4. Require that the tailings pond be nonimpounding upon termination. Stauffer seems willing to accept the spillway concept previously described. ✓
5. A variance to Rule M-10(4) "Slopes" is not needed as angle of repose dumping is allowable as long as mass stability is assured.
6. Initiate the formulation of a surety contract agreement similar to Kennicott's.
7. Require submittal of the full content of ongoing revegetation testing plans to the Division with the commitment: a. to continue work in this area and; b. to develop a workable revegetation plan in cooperation with the Division.

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